United States Department of Agriculture | Forest Service | Northeastern Area State and Private Forestry | Cor. Concord & Mast Rds. P. O. Box 640 Durham. NH 03824

File Code: 3400

Date: July 14, 1995

Ms. Maria Burks, Superintendent
USDI, National Park Service
Cape Cod National Seashore
South Welfleet, MA 02663

Dear Ms. Burks:

In March of this year, we established fifteen clusters of permanent plots on Cape Cod National Seashore to monitor the density and extent of browntail moth populations (Biological Evaluation, March 1995). Plot clusters were distributed along the outer Cape in covertypes susceptible to this exotic insect, and population levels were determined in each plot by counting overwintering webs. On June 14 and 15, 1995, as a follow-up to that evaluation, we made defoliation estimates for each of the plots. This report documents those defoliation estimates as well as our observations of dieback and mortality of host species of browntail moth on Cape Cod.

Methods

Defoliation estimates were made for all of the plots listed in our March evaluation. Each plot was categorized into one of 6 defoliation classes based on the estimated percentage of foliage removed. The defoliation classes we used were: 0; 1-25% (light); 26-50% (moderate) ; 51-75% (heavy); 76-99% (severe); and 100%.

Results

The results of our survey indicate that browntail moth populations remain at high levels in the bayberry/beach plum covertype of the outer cape but that no evidence of expansion of browntail moth populations southward is apparent. Table 1 lists each plot for the 6 northernmost plot clusters, the number of overwintering webs found in March, and the defoliation estimate. No defoliation was found in the 9 southernmost plot clusters. Therefore, data from those plots are not listed in Table 1.

The results listed in Table 1 show a fairly consistent pattern. We found heavy to severe defoliation in almost all plots which had 10 or more overwintering webs. The variability in this observation appeared to be derived from the actual vegetation within the plot. In plots with only smaller shrubs like beach plum, such as the Herring Cove Beach plots, defoliation is severe. In areas where there are larger plants, like cherry or, in the case of Race Point, some swamp willow, defoliation is less.

In addition to the measured values listed above, we noted the following observations. Dieback of the woody vegetation was extremely high on the outer cape in the bayberry/beach plum covertype, which is most susceptible to the insect. We estimate that most beach plum clumps had at least 50 percent and usually 70-80 percent dieback. Dieback in cherry was somewhat less, averaging an estimated 10-20 percent.

Table 1. Number of browntail moth overwintering webs and estimated defoliation values, by plot cluster.

PLOT CLUSTER	SUBPLOT	# OF WEBS	DEFOLIATION CLASS
Herring Cove Beach #1	Center	10	76-99
	North	12	76-99
	East	0	1-25
	South	61	76-99
	West	1	1-25
Herring Cove Beach #2	Center	37	76-99
	North	11	76-99
	East	2	1-25
	South	48	76-99
	West	13	51-75
Race Point/Airport	Center	42	76-99
	North	0	0
	East	177	76-99
	South	108	1-25
	West	35	76-99
Pilgrim Lake #1	Center	56	51-75
	North	47	76-99
	East	29	26-50
	South	36	26-50
	West	15	76-99
Pilgrim Lake #2	Center	0	1-25*
	North	1	1-25
	East	0	1-25*
	South	0	1-25*
	West	0	1-25*
Head of Meadows	Center	7	1-25
	North	5	1-25
	East	5	1-25
	South	0	1-25*
	West	0	1-25*

* There was defoliation in these plots, caused mostly by eastern tent caterpillar. However, since there was browntail moth in the area, it was assumed that some of the damage could be attributed to browntail moth.

The cause of the high rate of dieback on the woody vegetation on the outer dunes is difficult to attribute to one factor. While the browntail moth was the most abundant defoliator, we also observed large numbers of eastern tent caterpillars and some gypsy moth in these areas. In several instances, beach plum leaves were being stripped as they flushed out, leaving most clumps basically bare of foliage during the peak of the growing season. We do not know whether secondary agents, such as root diseases, are playing a role in the dieback we observed. These agents are often cited as the cause of decline in forest trees following repeated defoliation. In our opinion, it is a question that deserves further investigation.

We support the development of environmentally sensitive methods to manage browntail moth populations. There is renewed interest in developing a browntail moth pheromone, and we encourage the National Park Service to cooperate with the USDA-APHIS Methods Development Laboratory at Otis ANGB in this work.

We would also be available to participate in work related to the microbial agents, parasites, and predators of the browntail moth. Forest Service research units in our area have also expressed an interest in this work. Augmentation of these natural control agents may allow us to better manage browntail moth populations in the future.

Should you have any questions, please contact either of us at (603) 868-7709. We have enclosed about 30 copies of our Browntail Moth Pest Alert.

Sincerely,

Bernard J. Raimo

BERNARD J. RAIMO
Entomologist
Forest Health Protection

Bernard J. Raimo for

KURT ALLEN
Entomologist
Forest Health Protection

cc:
Mike McManus, NEFES-Hamden
Vic Mastro, USDA-APHIS
Charlie Burnham, MA

Enclosures:
Browntail moth pest alert